

YAMAZAKI ET AL. -- 10/658,370
Attorney Docket No.: 008312-0305862

- Amendment -

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (*Cancelled*).

2. (*Currently Amended*) A method of detecting a malfunction in an electric injection-molding machine, the method being applied to the step of ejecting ejection of a molded product by pushing an ejector pin out of a die, the method comprising:

obtaining a pattern showing characterizing torque of an ejector-pin driving motor versus relative to time or a position of an ejector pin based on when a molded product is normally removed;

setting, in advance, at least one monitoring zone based on the pattern and the upper and lower limits of torque in each of the monitoring zones;

monitoring a torque value in each of the monitoring zones during the ejecting step, judging ejection of the molded product and determining that a malfunction occurs has occurred when the torque value falls outside the upper and lower limits of the monitoring zone, and counting the number of malfunctions; and

raising an alarm when the number of malfunctions in during a single ejection step reaches a predetermined number.

3. (*Currently Amended*) A method of detecting a malfunction in an electric injection-molding machine, the method being applied to the step of ejecting ejection of a molded product by pushing an ejector pin out of a die, the method comprising:

obtaining a pattern showing characterizing torque of an ejector-pin driving motor versus relative to time or a position of an ejector pin based on when a molded product is normally removed;

setting, in advance, at least one monitoring zone based on the pattern and the upper and lower limits of torque in each of the monitoring zones;

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monitoring a torque value in each of the monitoring zones during the ejecting step, judging ejection of the molded product and determining that a malfunction occurs has occurred when the torque value falls outside the upper and lower limits of the monitoring zone, and counting the number of malfunctions; and

raising an alarm when the number of malfunctions occurring within a predetermined time reaches a predetermined number.

4. (*Cancelled*).

5. (*Currently Amended*) A method of detecting a malfunction in an hydraulic injection-molding machine, the method being applied to the step of ejecting ejection of a molded product by pushing an ejector pin out of a die, the method comprising:

obtaining a pattern showing characterizing hydraulic pressure of an ejector-pin driving hydraulic pump versus relative to time or a position of an ejector pin based on when a molded product is normally removed;

setting, in advance, at least one monitoring zone based on the pattern and the upper and lower limits of hydraulic pressure in each of the monitoring zones;

monitoring a hydraulic pressure value in each of the monitoring zones during the ejecting step, judging ejection of the molded product and determining that a malfunction occurs has occurred when the hydraulic pressure value falls outside the upper and lower limits, and counting the number of malfunctions; and

raising an alarm when the number of malfunctions in during a single ejection step reaches a predetermined number.

6. (*Currently Amended*) A method of detecting a malfunction in a hydraulic injection-molding machine, the method being applied to the step of ejecting ejection of a molded product by pushing an ejector pin out of a die, the method comprising:

obtaining a pattern showing characterizing hydraulic pressure of an ejector-pin driving hydraulic pump relative to time or a position of an ejector pin based on when a molded product is normally removed;

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setting, in advance, at least one monitoring zone based on the pattern and the upper and lower limits of hydraulic pressure in each of the monitoring zones; and

monitoring a hydraulic pressure value in each of the monitoring zones during the ~~ejecting step, judging ejection of the molded product and determining that~~ a malfunction occurs when the hydraulic pressure value falls outside the upper and lower limits of the monitoring zone, and counting the number of malfunctions; and

raising an alarm when the number of malfunctions occurring within a predetermined time reaches a predetermined number.